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(54) Title: AROMATIC PHOSPHONIUM SALTS AND THEIR USE AS LABELING REAGENTS MASS SPECTROMETRY ANALYSIS

(57) Abstract: This invention relates to methods and reagents for the assay, detection, quantification, location, or analysis of each of a plurality of substances of interest ("analytes") in a sample in which each substance is labeled with a cationic triarylphosphonium group. The present invention also provides MALDI mass spectrometry techniques in which the analysis of samples containing low molecule weight analytes is not obscured by matrix components. The invention also provides labeling reagents for use in labeling analytes prior to MS analysis in which the labeled analytes have a molecular weight above the useful detection threshold of MALDI techniques. In some aspects, the invention provides methods of quantitative MS analysis of components of a sample. Methods of the present invention include sensitive techniques for desorption/ionization of molecules at the picomole, femtomole, and attomole amounts. Another benefit of the present invention is that measurement of m/Z values is not complicated by the low-mass interference that a matrix normally offers, and therefore the invention provides methods of MALDI MS analysis of low molecular weight samples as well as mixtures of high and low molecular weight samples.